

REMARKS

This paper is being filed in response to an Office Action dated December 12, 2003. Claims 1-23 are currently pending in this application. Claims 1, 2, 4, 7, 9, 17 and 19 have been amended by this amendment. Upon entry of these amendments, claims 1-23 will remain pending in the present application. Applicants respectfully request a one-month extension of time and submit herewith a separate petition and appropriate fee for the extension of time.

Claim 1 has been amended to clarify that the heat transfer wall is adjacent the evaporation chamber and the dew-formation chamber. This amendment is supported by the specification and drawings, inter alia, from p. 7, line 22 to p. 8, line 11 and Figure 1. Claim 1 has also been amended to include a heating apparatus, as originally recited in claim 2.

Claim 2 has also been amended to clarify that the liquid mixture is provided onto the evaporation chamber side of the heat transfer wall, and that the heat transfer wall is in continuous contact with the liquid mixture. Support for “continuous contacting” is provided in the specification and the drawings, inter alia, from p. 6, line 26 to p. 7, line 4.

Claim 4 has also been amended to clarify that the wetting material is placed on the evaporation chamber side of the heat transfer wall. These amendments merely correct typographical errors.

Claim 7 has also been amended to correct a typographical error by replacing “desiccant/heat exchanger” with “desiccant heat exchanger.”

Claim 9 has also been amended to correct a typographical error by replacing “liquid/contactor” with “liquid-gas contactor.” Support for this change can be found in the specification, inter alia, at p. 14, lines 9-23. Claim 9 has been further amended to clarify that the recited “water vapor” should be the “separable liquid component.”

Claim 17 has also been amended to clarify that the liquid mixture continuously contacts the evaporation side of the heat transfer wall. Support for “continuous contacting” is provided in the specification and the drawings, inter alia, from p. 6, line 26 to p. 7, line 4.

Claim 19 has been amended to clarify that the “condensate production flux” relates to the condensation of the separable liquid component.

In view of sufficient support for all amendments, Applicant respectfully submits that no new matter has been added.

References Cited in the Search Report of March 12, 2002

The Examiner asserts that the references cited in the Search Report of March 12, 2002 have been considered, but will not be listed on any patent resulting from this application because they were not provided on a separate list in compliance with 37 C.F.R. 1.98(a)(1). Applicant respectfully disagrees with this statement. An appropriate Information Disclosure Statement listing the references on a PTO-1449 form was filed with the national entry of this application. A copy of the IDS, PTO-1449 form and the returned postcard is enclosed for the Examiner's review. A copy of each reference, however, is not enclosed, since the Examiner seems to have a copy of each reference. Applicant would be happy to provide a copy of each reference upon request.

Objection to the Abstract

The Examiner states that the abstract in the PCT does not suffice and that an abstract on a separate sheet is required. In view of the appended abstract, Applicant respectfully submits that this objection is now moot.

Rejections under Section 112, Second Paragraph

Claims 2, 5-7, 9 and 19 have been rejected under 35 U.S.C. § 112, second paragraph as allegedly indefinite. In particular, the Examiner asserts that the following recitations in the claims do not have proper antecedent basis: (i) "The evaporation side of said heat transfer wall" recited in claims 2 and 4; "The heating apparatus" recited in claims 5-7; "the water vapor in the remaining carrier gas" recited in claim 9; and (4) "the condensate production flux" in claim 19. The Examiner further asserts that the use of a slash in a claims, such as "liquid/contactor" is improper.

In view of the amendments to the claims presented herein, Applicants respectfully submit that these rejections are now moot. Withdrawal of these Section 112, second paragraph rejections are respectfully requested.

Rejections under Section 102/103

Claims 1, 2, and 17 have been rejected under 35 U.S.C. § 102(b) as allegedly anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over the Larson publication (Larson et al., *Desalination*, 73, pp. 119-137, 1989). In particular, the Examiner asserts that the

Larson publication anticipates or renders obvious the claimed continuous contacting apparatus, because the Larson publication discloses the recited evaporation chamber, dew-formation chamber and common heat transfer wall. Applicant respectfully traverses these rejections.

The applicant, James Beckman, is one of the co-authors of the Larson publication, published in 1989. The Larson publication was based on work done by Walter Albers and James Beckman between 1986 and 1989, which is exemplified in Albers (USPN 5,123,481), one of the patents currently asserted by the Examiner in the Section 103 rejection of claims 4, 7, 8 and 20. The Larson publication, therefore, is a generalized description of the staged processing illustrated in Albers, wherein the gas flows horizontally and the liquid is sprayed onto the wall of each stage. For example, Figure 1 at p. 123 of the Larson publication is a conceptual depiction of a single stage, where two pumps (one pump in each of the evaporation and condensation chambers) are need for a single stage. Figure 1 states that that electricity is needed for “FANS AND PUMPS.” Further support of multiple stages for is found in the Larson publication in the requirement of a plurality of pumps and blowers, see e.g., p. 131, line 18-21 (“power for CFP pumps and blowers”) and p. 136, line 19 (“using only simple pumps and low-pressure air blowers”). (Emphasis added.)

The Larson publication, therefore, fails to teach or suggest the presently claimed “continuous contacting apparatus,” e.g., a where the liquid mixture is maintained in continuous contact with the heat transfer wall. (See, e.g., applicant’s specification from p. 6, line 26 to p. 7, line 4.) In any event, Applicant has amended claims 1 and 17 to positively recite that the heat transfer wall is in continuous contact with the liquid mixture. Applicant, therefore, respectfully submits that these rejections of 1, 2, 1 and 17 have been overcome. Withdrawal of these Section 102/103 rejections are respectfully requested. If there are any remaining issues regarding the Larson publication, the Applicant respectfully requests a telephone interview with the Examiner.

Claims 2, 3, 5, 6, 9-16, 18-19, and 21-23 have been rejected under 35 U.S.C. 103(a) as allegedly unpatentable over the Larson publication or Kusakawa (USPN 4,595,459). In regard to the Larson publication, the Examiner references the reasoning in the Section 102/103 rejection of claims 1,2, and 17. In regard to Kusakawa, the Examiner asserts that the claimed apparatus and method are disclosed in Figures 2-4 of Kusakawa. The Examiner specifically asserts that the condensation sections of Kusakawa are deemed to correspond to the claimed “dew-formation chamber.” Applicant respectfully traverses these rejections.

Claims 2, 3, 5, 6, 9-16, 18-19, and 21-23 all directly or indirectly depend either from claim 1 or claim 17. In regard to the Larson publication, Applicant incorporates in by reference the arguments presented above in the Section 102/103 rejections of claims 1, 2 and 17. In regard to Kusakawa, Applicant respectfully submits that Kusakawa fails to teach or suggest (i) a heat transfer wall that is adjacent to the evaporation chamber and the dew-formation chamber, as currently recited in claims 1 and 17, and (ii) a heating apparatus for heating the carrier gas from the outlet of the evaporation, as recited in claims 2 and 17. In Kusakawa, the partition 15 is not adjacent to condensation pipe 20. (See e.g., Fig. 2 and from col. 6, line 51 to col. 7, line 6 of Kusakawa.) Furthermore, the water is heated by heat pipe 13 in Kusakawa, not the carrier gas. (See e.g., col. 4, lines 60-68.) Accordingly, Applicant respectfully submits that Kusakawa fails to teach or suggest one or more elements of claims 2, 3, 5, 6, 9-16, 18-19, and 21-23. Withdrawal of these rejections is respectfully requested.

Claims 4, 7, 8, and 20 have been rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over the Larson publication or Kusakawa, as applied to the previous rejections of the claims 2, 3, 5, 6, 9-16, 18-19, and 21-23, and further in view of Albers (USPN 5,123,481) or Maisotsenko (USPN 4,350,570). The Examiner asserts that it would have been obvious to provide a wetting material to the evaporation side of the heat transfer wall of the Larson or Kusakawa apparatus in order to obtain the advantages taught in Albers at col. 21, lines 37-63. Reference is also made to col. 4, lines 14-23 of Maisotsenko as allegedly disclosing the a similar process/apparatus to the claimed process and apparatus. Furthermore, the Examiner points to Albers for teaching desiccant at cols. 21 and 22 to render obvious claim 7. Applicant respectfully traverses this rejection.

Claims 4, 7, 8, and 20 all directly or indirectly depend from claim 1 or claim 17. Accordingly, Applicant incorporates herein by reference the arguments presented above regarding the Larson publication and Kusakawa. Applicant also incorporates herein the above arguments regarding the failure of Albers (USPN 5,123,481) to teach or suggest a continuous contacting apparatus. In regard to Maisotsenko (USPN 4,350,570), Applicant respectfully submits that Maisotsenko does not disclose a similar process/apparatus at col. 4, lines 14-23, as asserted by the Examiner. In Maisotsenko, no heat is separately added to air flow 11 throughout the entire process, as required by Applicant's claims 1 and 17. (See e.g., from col. 6, line 5 to col. 7, line 30 and Fig. 1 of Maisotsenko.) Accordingly, Applicant respectfully submits that the


Larson publication or Kusakawa and further in view of Albers and Maisontsenko do not render claims 4, 7, 8 and 20 obvious. Withdrawal of these rejections are respectfully requested.

Conclusion

In view of the remarks provided above, applicants submit that the present application is in condition for allowance. Applicant also requests a telephone interview before the next office action is issued, as discussed in more detail above. Reconsideration and allowance is respectfully requested.

Respectfully submitted,

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Appended Abstract.  
Enclosure.

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